

Response to OA of June 8, 2005  
Ser. No. 10/723,446

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IN THE CLAIMS

Claim History Summary:

5 Claims 1-21 were originally filed.

In an Office Action mailed June 8, 2005, the Office rejected claims 1-21, objected to claims 19, 20, 15 and 17, and rejected claim 9 under 35 USC §112, ¶2 as being indefinite.

10 Summary of Response

Claims 1, 6, 9, 15, and 17 are currently amended.

Claims 5 and 11 are canceled.

Claims 1-4, 6-10 and 12-21 are pending.

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Detailed Listing of All Claims 1-21:

- 1 (Currently amended). A compressor wheel comprising:
- titanium;
- a lower, proximate end;
- 5 an upper, distal end;
- an axis of rotation;
- a z-plane positioned between the lower, proximate end and the upper,  
distal end wherein the z-plane coincides substantially with a lowermost point of  
a trailing edge of a blade of the compressor wheel; and
- 10 a joint having an axis coincident with the axis of rotation and an end  
surface positioned between the z-plane and the upper, distal end wherein, in  
axial cross-section, the end surface comprises an elliptical shape.
- 2 (Original). The compressor wheel of claim 1 wherein the joint is capable of
- 15 receiving a balancing spindle and wherein a distal end of the balancing spindle  
extends beyond the z-plane.
- 3 (Original). The compressor wheel of claim 1 further comprising a balancing  
spindle positioned in the joint and having a distal end that extends beyond the
- 20 z-plane.

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4 (Original). The compressor wheel of claim 1 comprising a turbocharger  
compressor wheel.

5 (Canceled).

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6 (Currently amended). The compressor wheel of claim ~~5~~1 wherein the  
ellipse ~~elliptical shape~~ comprises a radius to height ratio of approximately 3:1.

7 (Original). The compressor wheel of claim 1 wherein the compressor wheel  
10 comprises titanium alloy.

8 (Original). The compressor wheel of claim 1 wherein the joint comprises a  
proximate portion, an intermediate portion and a distal portion.

15 9 (Currently amended). The compressor wheel of claim 8 wherein the distal  
portion comprises a diameter and a length of approximately 1.6 times of the  
diameters.

10 (Original). The compressor wheel of claim 1 wherein the peak principle  
20 operational stress of the compressor wheel occurs proximate to the end surface  
and proximate to the axis of rotation and does not exceed the yield stress.

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11 (Canceled).

12 (Original). The compressor wheel of claim 1 wherein the joint is capable of receiving a compressor shaft and wherein a distal end of the compressor shaft  
5 does not extend beyond the z-plane.

13 (Original). The compressor wheel of claim 1 further comprising a compressor shaft positioned in the joint and having a distal end that does not extend beyond the z-plane.

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14 (Original). The compressor wheel of claim 13 wherein the compressor shaft comprises a turbocharger shaft.

15 (Currently amended). An assembly comprising:

15 a compressor wheel, the compressor wheel comprising titanium, a lower, proximate end, an upper, distal end, an axis of rotation, a z-plane positioned between the lower, proximate end and the upper, distal end wherein the z-plane coincides substantially with a lowermost point of a trailing edge of a blade of the compressor wheel, and a joint having an axis coincident with the axis of rotation  
20 and an end surface positioned between the z-plane and the upper, distal end wherein, in axial cross-section, the end surface comprises an elliptical shape or a full radius; and

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a balancing spindle positioned in the joint and having a distal end that extends beyond the z-plane.

16 (Original). The assembly of claim 15 wherein the compressor wheel  
5 comprises titanium alloy.

17 (Currently amended). An assembly comprising:

a compressor wheel, the compressor wheel comprising titanium, a lower, proximate end, an upper, distal end, an axis of rotation, a z-plane positioned  
10 between the lower, proximate end and the upper, distal end wherein the z-plane coincides substantially with a lowermost point of a trailing edge of a blade of the compressor wheel, and a joint having an axis coincident with the axis of rotation and an end surface positioned between the z-plane and the upper, distal end wherein the end surface is shaped to reduce stress; and  
15 a compressor shaft positioned in the joint and having a distal end that does not extend beyond the z-plane.

18 (Original). The assembly of claim 17 wherein the compressor wheel comprises titanium alloy.

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19 (Original). A turbocharger comprising:

an end opposite the distal end of the compressor shaft of the assembly  
of claim 17 positioned in a turbine joint of a turbine wheel.

5 20 (Original). A method comprising:

inserting a balancing spindle into a closed-end joint of a compressor  
wheel to a depth beyond the z-plane of the compressor wheel;

balancing the compressor wheel;

removing the balancing spindle; and

10 inserting a compressor shaft into the closed-end joint of the compressor  
wheel to a depth that is not beyond the z-plane of the compressor wheel.

21 (Original). The method of claim 20 wherein the step of inserting the  
balancing spindle to the depth beyond the z-plane includes stabilizing the

15 compressor wheel for the balancing.